REMARKS

Pending Claims:

Claim 1 is pending and has been amended to meet the requirements of the Examiner. Among other modifications, claim 1 now incorporates the limitations of claim 2. Claims 2 and 3 have been canceled.

Rejection under 35 U.S.C. §103

1. Number of Links in Arm

Claim 1 was rejected under §103(a) as unpatentable over Jako (US 4,571,038) in view of Brambring (US 3,809,454). Jaco teaches a dental chair with a microscope suspended from a mostly horizontal arm. The arm is attached to a vertical pole or support. Jaco does not describe the arm in the text. The only detail about its structure is in Figure 1, which shows that the arm consists of three sections, one horizontal and apparently rigidly mounted to the vertical pole, and two others that appear to be capable of swiveling relative to each other and to the rigidly mounted horizontal section.

Brambring also teaches an arm at the end of which a microscope is suspended for viewing a patient, but in this case the arm is attached to a chair for the physician that can be rolled on casters to the patient. The Brambring arm is also attached to a vertical pole. The arm, which consists of two horizontal segments that can pivot relative to each other, also can move vertically along the vertical pole. Only one segment (21b) can swivel: "The swing lever consists of two sections 21a and 21b which are connected to each other and swingable round the vertical axis 23." This sentence should be compared with their Figure 1. For 21a to not to be rigid, it would also have to swivel about a vertical axis passing through the vertical pole (13) ("stand tube"). However, the "stand tube 13 has an upper narrower tube section 13a on which a traversing slide 17 is mounted and which is slidable on the tube section 13a in the direction of the longitudinal axis of the stand tube." [col. 2 lines 29—33]. In turn, the "swing lever [is] attached to traversing slide 17." [col. 2 lines 34—35]. This indicates that section 21a can move vertically, and that section 21b rotates in a horizontal plane relative to section 21a. But the Brambring arm cannot rotate in a horizontal plane from the point 17 about the vertical pole 13a.

Taken together, Brambring and Jaco teach at most two horizontal links that can swivel in the horizontal arm. The horizontal freedom of movement of the suspended microscope is significantly dependent on the number of links that can swivel. For example, under the assumptions that (1) the microscope were rigidly attached to the link most separated from the vertical support; and (2) all links can rotate horizontally relative to each other and, in the case of the innermost link, to the vertical support, then with an arm having only one link, the microscope could be positioned at all points on

the circumference of a circle (angular freedom of position). With two links of equal length, the microscope could be positioned at all points within a circle (radial freedom of position), but the angle of the microscope relative to the outermost link would be restricted to only one or two values. It takes a third rotatable link to also have freedom of microscope angle.

With a third link, as in the present invention, all positions and all horizontal viewing angles are possible over a contiguous area of points. Komura (US 4,548,373) teaches an arm in a device for supporting a medical instrument having 3 links for mounting an instrument, the links capable of rotating horizontally with respect to each other and with respect to a vertical supporting pole.

However, even with 3 links, each individual link is relatively long. Consequently, to position the microscope over certain points above the patient, the extremes of the bent arm will extend significantly in the direction perpendicular to the horizontal axis of a reclined or partially reclined patient (see Figure 1). Such unnecessary lateral extension is awkward at best. The further the arm extends in this cross-chair direction, the more likely it is to get in the way of the staff (e.g., dentist, assistant, hygienist) performing the procedure or to get bumped, wasting time or even causing injury.

For this reason, according to the description of the present invention, on the other hand, "It is preferable to have at least four arms [i.e., links] to provide an adequate range of movement for dental applications." [p. 3 lines 32—33]. Consequently, claim 1 has been amended to specify that the positioning arm has "four or more hinged links."

2. Terminal Link and Rotation in Two Dimensions

Claim 1 has also been amended to incorporate the limitation of claim 2 ("a repositionable axis of rotation orthogonal to said substantially vertical support arm proximate said variable focus microscope, whereby said terminal link permits said variable focus microscope to be inclined at any of several discreet pre-selected angles with respect to said substantially vertical support arm"). Claim 1 also now includes the limitation "the microscope rotationally attached to the coupler along an axis that is perpendicular to the length of the terminal link and that lies within a plane which is perpendicular to the ground." (Fig. 6 and p. 4 lines 7—10.) The combination of discrete set angles for rotation around an axis perpendicular to the vertical support pole with

continuous rotation capability of the microscope in the other plane as described above is unique in any of these instruments and novel.

3. Chair Positioning Controls

The Examiner contends that "Jako inherently discloses a method of using a surgical microscope with a chair having a movable chair bottom and having a rotatable chair back" whereby the subject is brought into focus by rotating the chair bottom. While we respectfully disagree because neither the figures of Jaco (see Fig. 1) nor the text of the description indicate that the chair is anything but fixed, we have amended claim 1 to also limit our chair to one that can be raised and lowered by the dentist using a foot control 30 and rotated about a pivot point near the patient's hips using a hand control 16.

CONCLUSION

The claim remaining in this application should now be seen to be in condition for allowance. The prompt issuance of a notice to that effect is solicited.

Respectfully submitted,
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Date: 10/3/05

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